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(54) ULTRASONIC CONVERTER ARRAY

(57)Abstract:

PURPOSE: To reduce the number of converter elements by increasing the (x) coordinate of the central point of a converter element outward between the central points of adjacent converter elements so as to keep the definite integral of a function f(x) over (x) is constant.

CONSTITUTION: A row (i) and a column (j) of an MXN matrix located in an orthogonal coordinate system provided with an origin S, (x) and (y) axes are formed by the converter element T_{ij}. The row (i) is extended in the (x) direction and the column (j) is extended in the (y) direction. Intervals between the centers of the adjacent converter elements, e.g. (M_{ij} and M_{ij+1}), (M_{ij+1} and M_{ij+2}), and (M_{ij+2} and M_{ij+3}) monotonically increases outward. Consequently, a function f(x) for the row (i) and a function g(y) for the column (j) may be selected such that they are, respectively an even function with respect to the center S of, symmetry i.e., f(x)=f(-x) and g(y)=g(-y), and decreases strictly monotonously with the increase in the absolute values |x| and |y|.